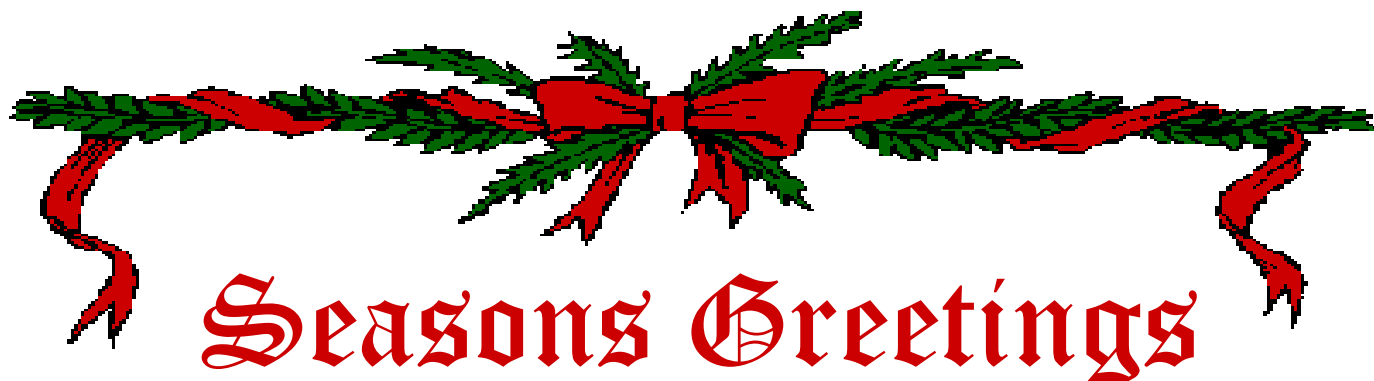


# HEART OF TEXAS COOPERATIVE OBSERVER



From the staff at  
WFO San Angelo



## A note from the Editor

This will be the last Cooperative Observer Newsletter that I will be serving as Editor and Publisher. After nearly 42 years of service, I have decided it's time to move on. I have set a retirement date of June 3, 2011. My new career will be farming/ranching on a small place about 40 miles south of Fort Worth.

It has been a privilege and an honor to manage the Data Acquisition program at WFO San Angelo the last 15 years.

Managing the Cooperative Observation program and the Rainfall Network program for the West Central Texas area has been one of the highlights of my career. When we took over the programs in 1995 I had no idea I would encounter so many selfless, dedicated volunteers. I have had the privilege of meeting many of you over the years and talked to the rest of you on the phone on numerous occasions. Thank you for your time, your patience and your dedication, it made my job a lot easier.

Les Hiesler  
Data Acquisition Program Manager  
WFO San Angelo, Texas



## GAINS AND LOSES

There were only a couple of losses over the last half of the year. Cole Crenwelge in Ozona left the program after 1 year and Glenda Bowden of Lawn left after 4 years. We are currently looking for new observers for both Ozona and Lawn.

Joining the Cooperative Observation program are John Wren in Abilene, Doris Brandt at Oak Creek Lake and Orvaline Okerstrom and Shannon Roysden at the Abilene State Park. Welcome to the program. We look forward to working with you for years to come.

# LENGTH OF SERVICE AWARDS



Mrs. Velma Adams of Winchell, Texas received her 35 year Length of Service Award from Joel Dunn, Meteorologist Intern at WFO San Angelo, Texas.

Photo was taken by Eva Mullen, Hydro-meteorological Technician at WFO San Angelo.

Mr. Roy B. Oliver of Woodson, Texas received his 20 year Length of Service Award.

Presenting the award and taking the photo was Eva Mullen, Hydro-Meteorological Technician at WFO San Angelo, Texas





# THE HISTORY OF VOLUNTEER WEATHER OBSERVERS

By Eva Mullen

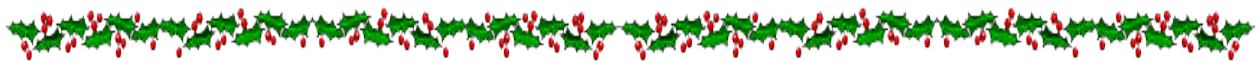
The earliest known weather observations were recorded without instruments in the mid 1600s. In the 1700's, some well known observers were George Washington, Thomas Jefferson and Benjamin Franklin. Thomas Jefferson envisioned a nationwide network of weather observers as early as 1797 and set up the first circle of observers in every county in Virginia. By the early 1800s, the National Network of Weather Observations encompassed six states, and was the responsibility of the Surgeon General, Dr. James Tilton. At that time they used weather observations to research the influences of weather and climate on diseases.

The Smithsonian Institute took control of the Volunteer Weather Program in the mid 1800s. President Ulysses S. Grant signed into law the creation of The Division of Telegrams and Reports for the Benefit of Commerce in 1870. This was the precursor to the Weather Bureau and was under the direction of the Signal Service.

A new Weather Agency was created in October 1890, and was given charge of the Volunteer Weather Program, along with weather forecasting, issuing warnings, and displaying flood signals for the benefit of agriculture, commerce and navigation. The new agency was also in charge of gauging rivers, keeping telegraph lines along seacoasts operating, and reporting temperature and rainfall for cotton interests.

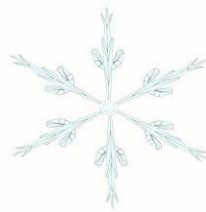
Today, there are nearly 11,000 volunteers across the United States that record weather observations. These observers conscientiously give of themselves and their time to record temperature and measure rainfall. This information defines the climate in their areas. It also answers questions and guides the actions of public agencies, agriculture, commercial organizations and individuals. It is used for preparedness in emergencies such as flooding. Without these volunteers, we couldn't begin to know the details of the United States climate or research global change.

There are no words to describe the value of weather observations that are taken and transmitted on a daily basis. Today's commerce, agriculture, weather forecasts and much more are dependant on your reports. So, to the cooperative observers that give a few minutes of their time each day to record and transmit a weather observation, your community and nation thank you.



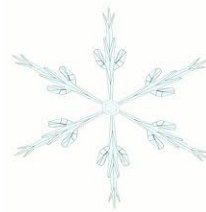
## Reminder to Rainfall Network Sites

Please remember that rainfall you report to the weather office must be for the 24 hour period ending at your observation time. Your observation time should be sometime between 7 am and 9 am each day. Reports must be received by this office no later than 10 am if your report is to get into the national database.



# Wind Chill

By Joel Dunn, Meteorologist Intern



Wind Chill makes an appearance every year about this time. We see temperatures continue to drop and as we all know windy conditions can happen anytime in West Central Texas. It's these two factors, temperature and wind speed, that make up Wind Chill.

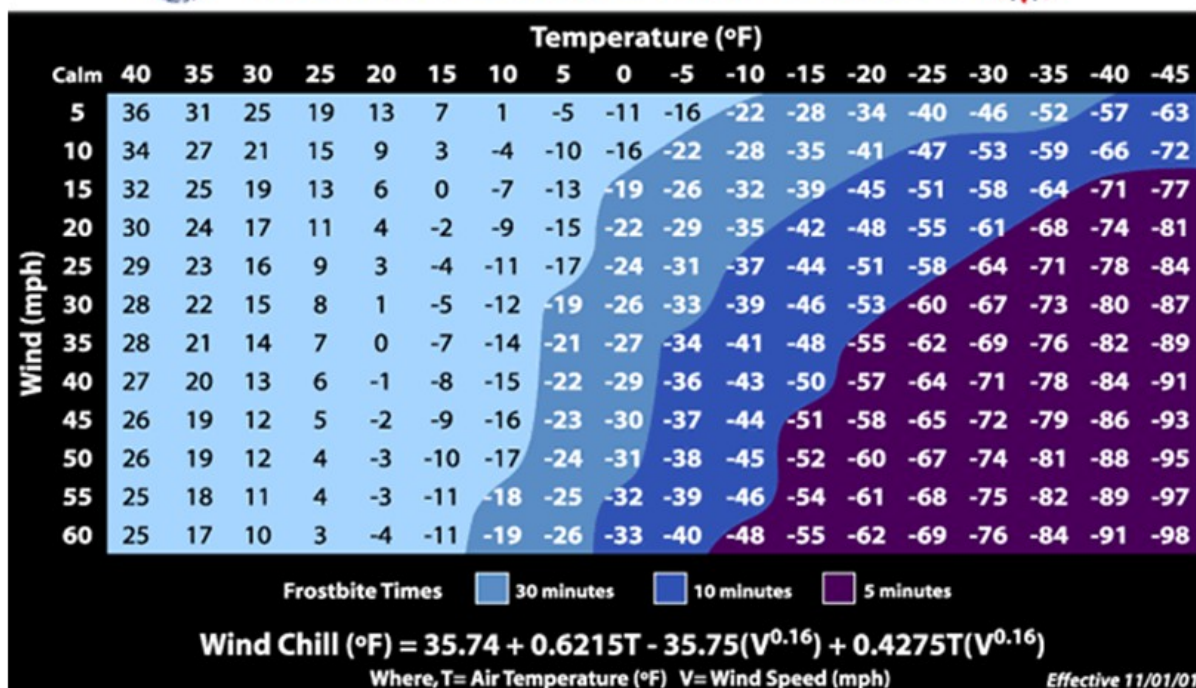
For inanimate objects wind chill only serves to bring the object to the ambient temperature faster than it would without wind. The object will not, however, cool below the ambient temperature. For example, if the temperature is 35°F and the wind speed is 35 mph, then the calculated Wind Chill will be 21°F. Assuming they are dry, your pipes, car, sidewalk, etc. will cool very quickly to 35°F but no further, even though the wind chill is 21°F.

On the other hand, biological organisms, such as you and me, react differently to Wind Chill. As the wind blows across your skin it is attempting to drop the surface temperature of your skin to the surrounding temperature just like the inanimate object. However, your body responds to this and reacts by warming your skin, when this happens in an environment with cold temperatures and high wind speeds it can feel much colder than it really is, because wind causes your body to lose heat faster.

It is important to note that current wind chill and forecasted wind chill is a very serious factor to remember when venturing out. If we don't take time to check the weather forecast, wind chill could sneak up on us with results worse than most people would anticipate. Frostnip or frostbite can result from wind chill if care is not taken. This happens when temperature is 32 degrees or less, wind chill temperature is lower, and skin is left exposed for long periods of time. If you must venture out on blustery winter days, remember to dress for the conditions. Several layers of loose clothing with little or no exposed skin works best.



## NWS Windchill Chart



# Winter Weather Outlook for West Central Texas

By Matthew Groh, Meteorologist

La Niña conditions developed this past summer, and have strengthened this fall, in the equatorial waters of the Pacific Ocean. La Niña is associated with a periodic cooling in the central and east central part of the equatorial Pacific Ocean. This cooling roughly occurs every 3 to 5 years. The Climate Prediction Center indicates that strong La Niña conditions will occur through this upcoming winter season, with a continuation of La Niña conditions through spring of 2011. How might this have an effect on the weather in Texas? Cooler waters of the equatorial Pacific can have an indirect effect on global circulation patterns, which in turn affect the strength of storm systems, the jet stream, and the track of storm systems across the United States during winter months. Effects of the stronger La Niña events tend to result in warmer and drier than normal conditions during winter across much of the southern United States, including Texas. Dry conditions have already developed, and indications favor a persistence and worsening of these dry conditions through the winter season. This would likely result in the development and expansion of drought conditions across our region. Another concern with the possible effects of La Niña is with the fire weather situation. Dry conditions, especially when combined with windy conditions and above normal temperatures, cause grass and brush to lose additional moisture and become very dry. This can lead to an increased threat for wildfires.

Figures 1 and 2 show the 90-day outlooks (January through March, 2011) for temperatures and precipitation. These outlooks are issued by the Climate Prediction Center, and take into account the anticipated effects of La Niña. For west central Texas, the 90-day outlook calls for an enhanced probability for temperatures to average above normal across all of west central Texas. The 90-day outlook for precipitation indicates that precipitation will most likely be below normal across West Texas. Farther to the east across our area, an equal chance is indicated for precipitation to be below, near, or above normal. Even though the 90-day precipitation outlook has higher probabilities for below normal precipitation through February, the outlook changes when March is included.

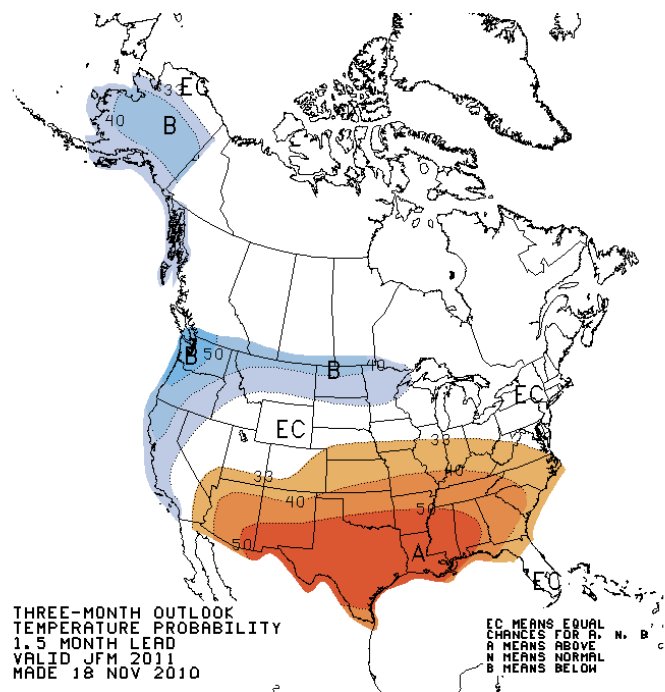


Figure 1 Temperature Probability for the period January through March 2011.

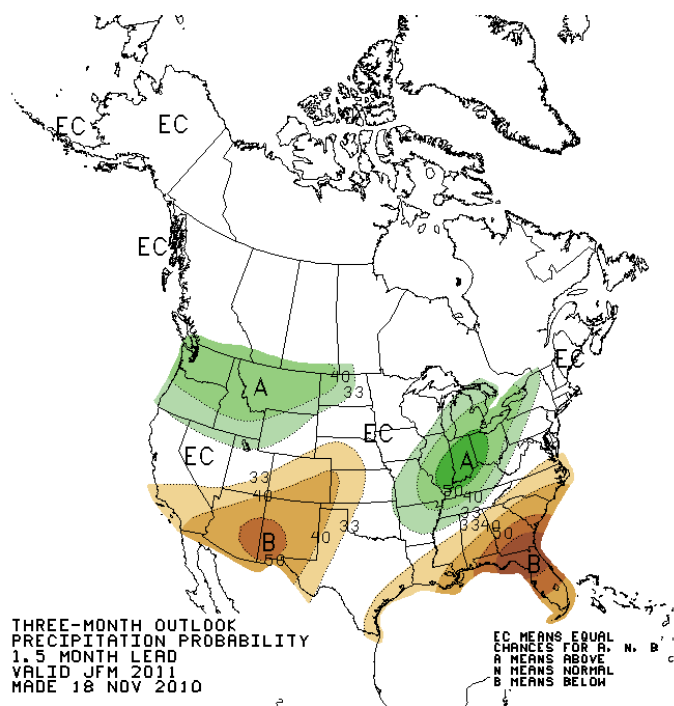


Figure 2. Precipitation Probability for the period January through March 2011.

Springtime weather pattern develops across our region in March, which brings the possibility of thunderstorms, and usually marks the beginning of severe weather season. Thunderstorms can bring locally heavy rainfall, and occur on a smaller scale than the long-range precipitation outlooks can take into account. A single wet weather event with showers and thunderstorms can bring rainfall amounts higher than the normal monthly rainfall.

It should also be noted that even though warmer and drier than normal conditions are favored for our region through the winter season, winter precipitation events and temporary intrusions of cold air can still occur, even when La Niña conditions are present.

In our region, normal high temperatures in the mid to upper 50s in January climb into the lower to mid 60s in February, before rising into the lower to mid 70s by the end of March. Normal low temperatures are in the lower 30s during January, before climbing through the 30s in February, reaching the mid to upper 40s in late March. The winter season brings on average the lowest precipitation amounts to west central Texas, but precipitation typically begins to increase in March and continues to increase through the spring months. Normal precipitation for January through March is 3.51 inches for Abilene, and 2.99 inches for San Angelo.



## PAPERLESS OBSERVATIONS

We are moving right along with converting station reports over to paperless. It is imperative that you transmit your observations daily if your station has converted to paperless. If you can't get through on WxCoder (computer data entry) or IVROCS (telephone data entry), then please call this office so that we can enter your data from here. If your data is missing, you must enter M's in all of the fields for that day. Stations that are now paperless and are transmitting their observations daily, no longer need to mail forms to the weather office. These stations are: Abilene 2, Albany, Anson, Ballinger 2NW, Brady, Brownwood, Eden, Eldorado 10W, Ft. McKavett State Park, Glen Cove 2NE, Haskell, Junction 4SSW, Mason, Menard, Merkel 12SW, Mertzon 12WNW, Ozona 22SE, Putnam, Water Valley, and Winters 1NE. Stations that have been submitted for approval to go paperless are: Burkett, Eldorado, Hamlin, Fort Griffin, Concho Park Marina, Red Bluff Crossing, Rotan, Humble Pump Station 5WNW, San Saba 7NW, Santa Anna 12SSE, Stamford, Sterling City, Taylor Ranch, Throckmorton 7NE, Water Valley 11NE, and Woodson. These stations should be approved by the first of the year.

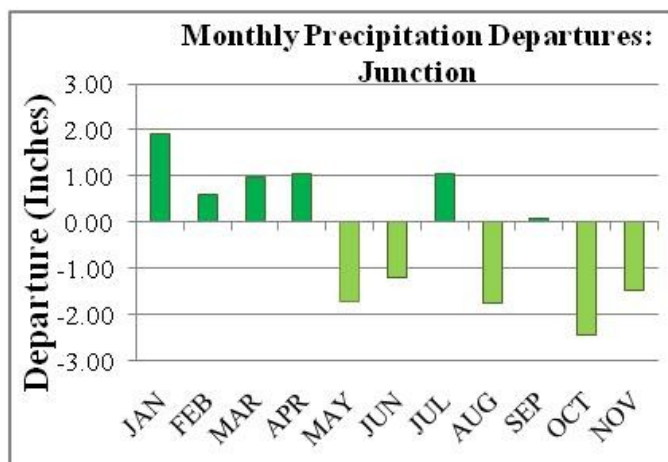
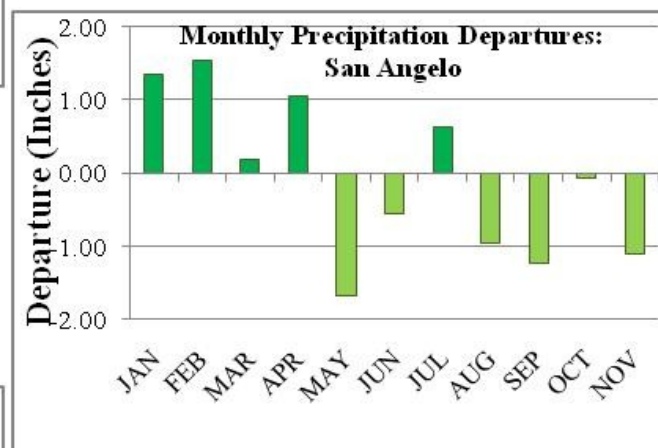
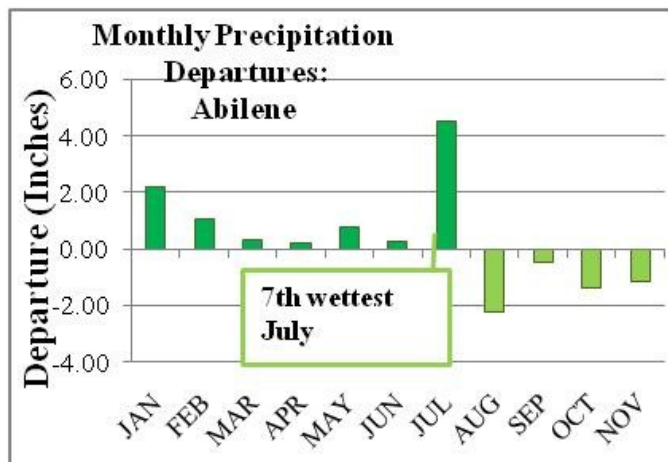


# The Effects of the Equatorial Pacific on the Weather across West Central Texas

By Kimberly Hoepfner, Meteorologist Intern

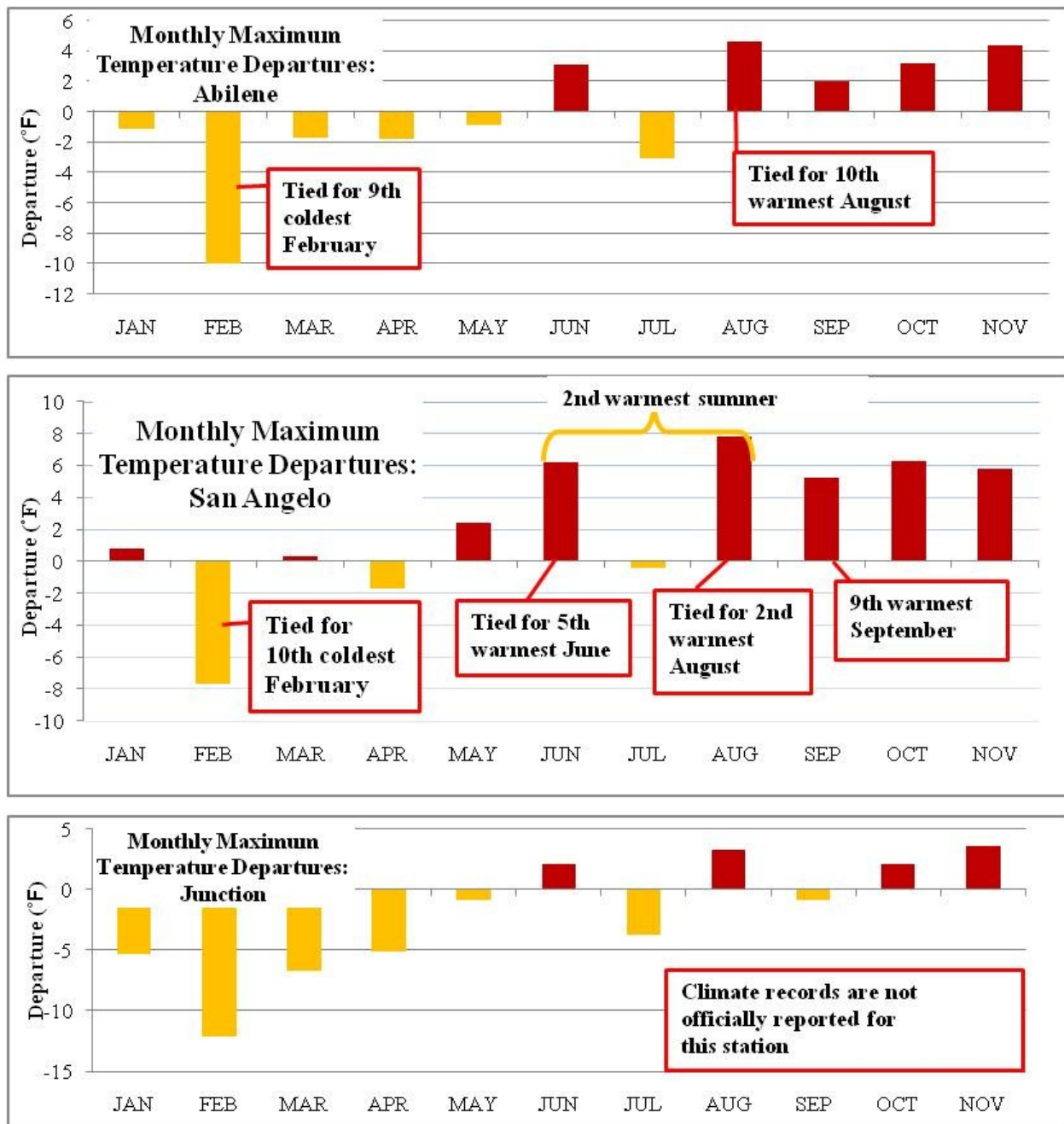
This region, as a semi-arid climate, experiences extreme effects from El Niño and La Niña weather patterns which influence west central Texas by bringing wetter/colder or drier/warmer seasons. We started this year in the El Niño weather pattern that ended late spring, and now have transitioned into a strong La Niña pattern. After a cool wet winter, area residents did not mind the warmer temperatures at the beginning of the summer. However, the onset of record breaking temperatures in late summer combined with little rainfall had everyone searching for a reprieve. Recent warmer maximum temperatures, resulting from dry air masses, have made the outdoors enjoyable for people who are out for recreation. However, for farmers and ranchers these conditions have had negative impacts for their operations.

The following graphs represent monthly precipitation departures in 2010 compared to average. The averages for Abilene and San Angelo are based on the 30-year period from 1971 to 2000. The average for Junction was calculated from the 1907 to 2009 time period. All three stations had above average precipitation early this year. This matches up with the El Niño pattern that started off last winter. Since August the area has been in a drier or below average rain pattern, which correlates nicely with what is expected during La Niña events like one.





The next set of graphs depict how Abilene and San Angelo's monthly average maximum temperatures this year compare to averages from 1971 to 2000. The normal averages for Junction were calculated from the 1907-2009 time period. San Angelo had an extremely long string of days that were 100 degrees or higher breaking several temperature records.



After looking over the precipitation and temperature graphs, it is apparent that west central Texas conditions have become drier and warmer nearer the end of this year. With a La Niña pattern underway, current climate predictions for this winter indicate that warmer temperatures and drier conditions are possible in December and may persist through February.

With the abundant vegetation growth in the early part of the year, and the very dry conditions this fall, we are entering a potentially dangerous winter fire season. High winds and low humidity levels that we typically see in the winter and early spring can cause fires to spread rapidly. Be sure to check the Texas Burn Ban map published by the Texas Forest Service, and local area forecasts before burning. Avoid burning on dry, windy days.

# West Central Texas Rainfall Totals

By Jason Johnson, Hydrologist

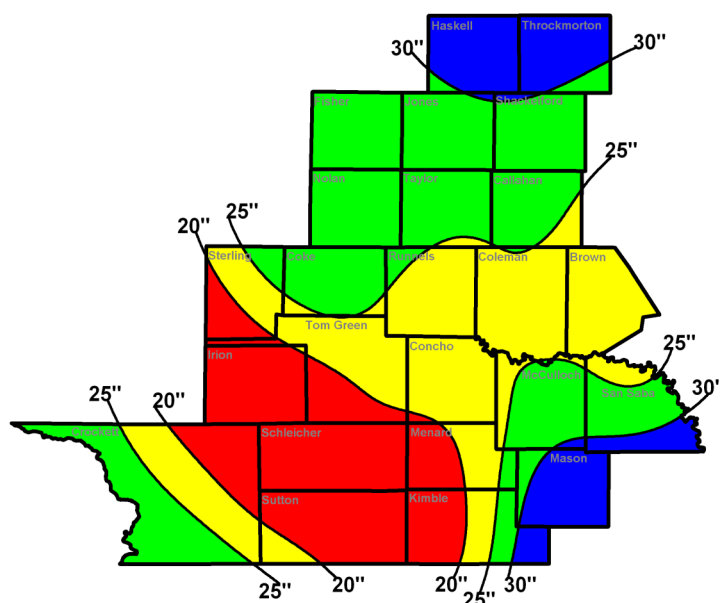
The year began with many areas across west central Texas receiving above average rainfall in January and February. However, the year is ending quite the opposite as dry conditions are dominating late fall. As discussed in other articles in this newsletter, we started the year with our weather patterns influenced by El Niño conditions and now ending the year influenced by La Niña conditions.

Rainfall data collected throughout the year by west central Texas Cooperative Observers is summarized in the figure below. Data collected from January through November showed a range of rainfall totals from 16.67 inches in Schleicher County to just over 34 inches in Mason County. These two rainfall sites are about 80 miles apart.

The monthly reports provided by cooperative observers give more detail to the summary totals. Picking up from the previous newsletter, the June through November rainfall reports are recapped below.

The average rainfall reported from coop observers in June was 2.40 inches. The highest monthly precipitation total of 6.33 inches was reported in southern Sutton County. Coop observers in Fisher and Sutton Counties received over four inches of rain in June.

In July, the average precipitation reported from coop observers was 4.16 inches. The highest monthly precipitation total of 7.98 inches was reported in southern Crockett County. Coop observers in Coke, Crockett, Haskell, San Saba, Shackelford and Throckmorton Counties received over 6.00 inches of rain for the month.



The average rainfall reported from coop observers in August was 0.98 of an inch. The highest monthly precipitation total of 3.75 inches was reported in McCulloch County. Coop observers in Fisher, McCulloch, Menard and Sterling Counties received over 2.00 inches of rain during the month.

In September, the average rainfall reported from coop observers was 3.52 inches. The highest monthly precipitation total of 7.34 inches was reported in Nolan County. Coop observers in Callahan, Coke, Coleman, Haskell, Jones, Nolan and Throckmorton Counties received over 5.00 inches of rain during September.

In October, the average precipitation reported from coop observers was 0.95 of an inch. The highest monthly precipitation total of 2.71 inches was reported in Callahan County. Coop observers in Callahan, Shackelford and Tom Green Counties received over two inches of rain in October.

The average rainfall reported from coop observers in November was 0.08 of an inch. The highest monthly total of 0.62 of an inch was reported in Jones County. Many observers reported that there was no measureable rainfall during November.

# 5 Significant Weather Events Across West Central Texas in 2010

By Hector Guerrero

On January 9, An arctic high pressure system settled over west central Texas, and caused bitter cold temperatures across the region. Low temperatures plummeted to the 4 to 8 degree range mainly south of Interstate 20.

On February 11, an upper level low pressure system interacted with a modified arctic air mass to cause heavy snow over the area mainly north of a line from Sterling City to Brownwood. Snow amounts north of Interstate 20 reached 4 to 7 inches. Seven inches of snow was reported at Rotan.

On February 23, a potent upper level low pressure system embedded in northwest flow moved into the region and brought a combination of cold air and snow. Four to six inches of powdery snow was reported across the region between the Interstate 10 and Interstate 20.



On May 15, a severe thunderstorm produced extensive wind damage and large hail near and north of the town of Mason. A National Weather Service survey team reported several trees down, a livestock auction facility suffered considerable roof damage, and a barn was damaged. Law enforcement officials reported many power lines down in Mason.

On May 24, strong thunderstorms dumped 5 to 7 inches of rain across central and northern Mason county producing significant flash flooding in creeks and streams. The Mason County Sheriff's Office reported extensive street flooding in and near the town of Mason, and a couple of high water rescues were reported. Flooding was reported on Wolf Creek and numerous other small streams across northern Mason county prompting temporary closure of Highway 386 north of Mason.

